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## (WO/2003/009567) FOLDING PORTABLE TELEPHONE

Biblio. Data

Description

Claims

National Phase

Notices

Documents

## Latest bibliographic data on file with the International Bureau

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**Priority Data:** 2001-213765 13.07.2001 JP

**Title:** FOLDING PORTABLE TELEPHONE

**Abstract:** A folding portable telephone in which reliability can be enhanced at the hinge part by suppressing action of an impact force onto a hinge part as much as possible when the portable telephone falls while folding the housing and an impact force acts onto any one of upper or lower housing, and the panel face at the display section is prevented from being damaged due to contact with the operating section. A protrusion (5) for preventing vertical oscillation of the upper housing (1) when the upper and lower housings are folded is provided on the forward end side end face of the lower housing (2) opposite to the base end side end face thereof where the hinge part (3) is fixed. Furthermore, protrusions (6) for preventing lateral oscillation of the upper housing (1) under folded state of the upper and lower housings are provided on the left and right end faces of the lower housing (2).

**Designated States:** CN, GB, US.

**Publication Language:** Japanese (JA)

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Figure 2

Figure 2 is a perspective view of the folding portable telephone 100 in its folded state. The telephone 100 is shown in a closed position, with the display 110 and the keypad 120 folded inward. The telephone 100 is shown in a compact, rectangular shape, suitable for carrying in a pocket or bag. The telephone 100 is shown in a perspective view, with the front face of the display 110 and the keypad 120 visible. The telephone 100 is shown in a perspective view, with the front face of the display 110 and the keypad 120 visible.



Terms of use

*Noto et al.*

Search results as of: 05-03-2006::08:37:06 E.T.

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First Named Inventor:	Makoto Noto , Yokohama-Shi, (JP)	Issue Date of Patent:	-

Title of Invention:	Folding portable telephone
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WO 03/009567 A1

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**(57) Abstract**

A folding portable telephone in which reliability can be enhanced at the hinge part by suppressing action of an impact force onto a hinge part as much as possible when the portable telephone falls while folding the housing and an impact force acts onto any one of upper or lower housing, and the panel face at the display section is prevented from being damaged due to contact with the operating section. A protrusion (5) for preventing vertical oscillation of the upper housing (1) when the upper and lower housings are folded is provided on the forward end side end face of the lower housing (2) opposite to the base end side end face thereof where the hinge part (3) is fixed. Furthermore, protrusions (6) for preventing lateral oscillation of the upper housing (1) under folded state of the upper and lower housings are provided on the left and right end faces of the lower housing (2).

**(57) 要約**



IN THE MATTER OF  
KOREAN PATENT APPLICATION  
UNDER SERIAL NO. 79301/2002

I, THE UNDERSIGNED, HEREBY DECLARE :  
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KOREAN PATENT APPLICATION UNDER

SERIAL NO.: 79301/2002

FILED ON: December 12, 2002

IN THE NAME OF: LG ELECTRONICS INC.

FOR: STRUCTURE OF DISPLAY  
APPARATUS

IN WITNESS WHEREOF, I SET MY HAND HERETO

THIS 4<sup>th</sup> DAY OF JULY, 2006

BY

-----  
KIM, EUN-HEE



[Translation]

PATENT APPLICATION

To : Director General  
The Patent Office

Date of Application : 2002. 12. 12

Classification for international patent : H04B 1/38

Title of the Invention : Structure of display apparatus

Applicant : LG ELECTRONICS INC.  
Code No. : 1-2002-012840-3

Attorney : Names : YANG, SOON SUK  
Code No. : 9-1998-000348-9  
General Authorization registration No.: 2002-027111-1

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Nationality : Republic of Korea

Request for Examination: Filed

This application is hereby filed pursuant to Article 42 of the Patent Law.

/S/ Attorney : YANG, SOON SUK

[Fee]

Basic filing fee -	13 Pages	29,000 WON
Additional filing fee -	0 Pages	0 WON
Fee for claiming a priority -	0 Case	0 WON
Fee for filing request for examination - 2 Claims		173,000 WON
Total -		202,000 WON

[Attached document ]

1. Abstract, Specification (Drawing) -1 copy



[Abstract]

[Translation]

In a mobile communication terminal, a structure of a display apparatus comprises a housing having a supporting flange formed from a bottom portion so as to have a receiving space; and an LCD module mounting member having an outer flange formed from a bottom portion so as to have a mounting space therein, wherein when an LCD module is mounted at the LCD module mounting member, the outer flange is protruded from an upper end of the LCD module mounting member. The LCD module mounting member is implemented as a metal plate of an SUS material.

[Representative view]

FIG. 4

[Index]

Impact attenuation, Display apparatus, LCD module, Liquid crystal screen



## [SPECIFICATION]

[Title of the Invention]

Structure of display apparatus

[Brief description of the Drawings]

FIG. 1 is a perspective view showing a mobile communication terminal in accordance with the related art;

FIG. 2 is a disassembled perspective view of a display apparatus of the mobile communication terminal in accordance with the related art;

FIG. 3 is a sectional view of the display apparatus of the mobile communication terminal in accordance with the related art;

FIG. 4 is a disassembled perspective view of a display apparatus according to the present invention; and

FIG. 5 is a sectional view of the display apparatus according to the present invention.

\*\*\*\* Explanation for the major reference numerals \*\*\*\*

122: housing                      122-1: receiving space

122-2: supporting flange

124: LCD module mounting member

124-1: mounting space

124-2: outer flange

126: LCD module

128: cover

[Detailed description of the invention]

[Object of the invention]

[Field of the invention and background art]

The present invention relates to a mobile communication terminal, and more particularly, to a structure of a display apparatus for a mobile communication terminal capable of implementing a display apparatus for displaying a dialed phone number or a current function and state to be slim, and capable of protecting an LCD.

Generally, a mobile communication terminal serves to communicate with another party regardless of a place and time while a user moves. The number of the mobile communication terminals is drastically increasing.

As shown in FIG. 1, the mobile communication terminal 10 comprises a body 11 having each electric component, and having an antenna at an upper end thereof; several key pads 12 formed at a front surface of the body 11 and pressed by a user for turning on/off a call or dialing; a display apparatus 20 hinge-coupled to both upper surfaces of the mobile communication terminal 10, for opening the key pads 12 according to the user's opening/closing operation displaying an inputted phone number or an operation state by pressing the key pads 12; a transceiver 13 provided at an upper side of the display apparatus 20 and a lower portion of the key pads 12, respectively; and a battery 14 detachably mounted at a rear surface of the body 11 for supplying power into the body 11 having the transceiver 13.

As shown in FIG. 2, the display apparatus 20 comprises a housing 22 having a supporting flange 22-2 formed from a bottom portion so as to have a receiving space 22-1; and an LCD module 26 having a certain shape and mounted at the receiving space 22-1; and a cover 28 attached to another side of the housing 22.

An assembly process of the display apparatus 20 of the mobile communication

terminal 10 will be explained. First, the LCD module 26 is mounted at the receiving space 22-1 of the housing 22, and the cover 28 is coupled to an upper side of the housing 22. Then, a main liquid screen 29-1 is attached to one side of the housing 22, and a sub-liquid crystal screen 29-2 is attached to one side of the cover 28.

Referring to FIG. 3, in the conventional display apparatus, the upper end of the LCD module 26 is protruding from the upper end of the supporting flange 22-2 that covers a lateral surface of the LCD module 26. Therefore, when the cover 28 is downwardly deformed, it directly contacts the LCD module 26 thereby to damage the LCD module 26.

Furthermore, in the conventional structure of a display apparatus, the supporting flange 22-2 that covers the lateral surface of the LCD module 26 is formed of a mould material. In order for the supporting flange 22-2 to have a high intensity, a section modulus has to be increased and a thickness of a certain degree has to be obtained, which causes the entire size of the display apparatus to be increased.

[Construction of the present invention]

To achieve the above object, there is provided a structure of a display apparatus capable of preventing an impact from being applied to an LCD module even when a cover is downwardly deformed by providing an LCD module mounting member having an outer flange that covers a lateral surface of the LCD module in a receiving space, by protruding an upper end of the outer flange from an upper end of the LCD module, and thus by firstly contacting the cover to the upper end of the outer flange.

According to another aspect of the present invention, there is provided a structure of a display apparatus capable of decreasing an entire size by providing an LCD module

mounting member having an outer flange to cover a lateral surface of an LCD module in a receiving space, and by implementing the LCD module mounting member as a metal plate of a SUS material thereby lowering a section modulus of a supporting flange.

In a mobile communication terminal, a structure of a display apparatus comprises a housing having a supporting flange formed from a bottom portion so as to have a receiving space; and an LCD module mounting member having an outer flange formed from a bottom portion so as to have a mounting space therein, wherein when an LCD module is mounted at the LCD module mounting member, the outer flange is protruded from an upper end of the LCD module mounting member. The LCD module mounting member is implemented as a metal plate of an SUS material.

In the structure of a display apparatus according to the present invention, the LCD module mounting member is implemented as a metal plate of a SUS material.

Hereinafter, preferred embodiment of the present invention will be explained in more detail.

FIG. 4 is a disassembled perspective view of a display apparatus according to the present invention, and FIG. 5 is a sectional view of the display apparatus according to the present invention.

As shown in FIG. 1, the mobile communication terminal 10 comprises a body 11 having each electric component, and having an antenna at an upper end thereof; several key pads 12 formed at a front surface of the body 11 and pressed by a user for turning on/off a call or dialing; a display apparatus 20 hinge-coupled to both upper surfaces of the mobile communication terminal 10, for opening the key pads 12 according to the user's opening/closing operation, displaying an inputted phone number or an operation state by pressing the key pads 12; a transceiver 13 provided at an upper side of the display apparatus 20 and a lower portion of the key pads 12, respectively; and a battery

14 detachably mounted at a rear surface of the body 11 for supplying power into the body 11 having the transceiver 13.

Referring to FIG. 4, the mobile communication terminal comprises a housing 122, an LCD module mounting member 124, a cover 128, etc.

A supporting flange 122-2 is formed at a bottom portion of the housing 122 so that a receiving space 122-1 can be formed in the housing 122.

Referring to FIG. 4, the LCD module mounting member 124 is received in the receiving space 122-1. The LCD module mounting member 124 is provided with an outer flange 124-2 from a bottom portion so that a mounting space 124-1 can be formed at an inner side of the LCD module mounting member 124.

Referring to FIG. 5, when the LCD module 126 is mounted at the mounting space 124-1, an upper end of the outer flange 124-2 is protruded from an upper end of the LCD module 126.

Referring to FIGS. 3 and 5, the LCD module mounting member 124 is formed of a metal plate of a SUS material and has an intensity enough to protect the LCD module 126, in which a sum of a thickness  $h_2$  between the supporting flange 122-2 and the outer flange 124-2 is less than the conventional thickness  $h_1$  of the supporting flange 122-2. Accordingly, an entire size of the display apparatus can be decreased.

Referring to FIG. 4, the LCD module mounting member 124, the LCD module 125, and the cover 128 are coupled to an upper surface of the housing 122.

Hereinafter, an operation of the structure of a display apparatus according to the first embodiment of the present invention will be explained.

Referring to FIGS. 4 and 5, when the cover 128 is downwardly deformed by a less amount of impact, the cover 128 comes in contact with only the upper end of the outer flange 124-2 protruded from the upper end of the LCD module 126. Therefore, the

impact is not directly applied to the LCD module 126. Also, when the cover 128 is downwardly deformed by a large amount of impact, the cover 128 comes in contact with only the upper end of the outer flange 124-2 protruded from the upper end of the LCD module 126. Therefore, the impact directly applied to the LCD module 126 is attenuated.

Referring to FIGS. 3 and 5, the LCD module mounting member 124 is formed of a metal plate of an SUS material. Therefore, the LCD module mounting member 124 has an intensity enough to protect the LCD module 126 even if a sum of a thickness  $h_2$  between the supporting flange 122-2 and the outer flange 124-2 is less than the conventional thickness  $h_1$  of the supporting flange 122-2.

In the preferred embodiment of the present invention, the LCD module mounting member 124 is formed of a metal plate of an SUS material. However, it is also possible to form the LCD module mounting member 124 with another material.

#### [Effect of the invention]

As aforementioned, in the structure of a display apparatus according to the present invention, the LCD module mounting member having an outer flange that covers a lateral surface of the LCD module is provided in the receiving space, and the upper end of the outer flange is protruded from the upper end of the LCD module. As the result, even when the cover is downwardly deformed, the cover firstly comes in contact with the upper end of the outer flange thereby to prevent the LCD module from being damaged by an impact.

Furthermore, in the present invention, the LCD module mounting member having an outer flange that covers a lateral surface of the LCD module is provided in the receiving space, and the LCD module mounting member is formed of a metal plate of an SUS material thus to lower a section modulus of the supporting flange. Therefore, the

entire size of the structure of a display apparatus can be decreased.

What is claimed is:

1. In a mobile communication terminal, a structure of a display apparatus comprising:

a housing having a supporting flange formed from a bottom portion so as to have a receiving space; and

an LCD module mounting member having an outer flange formed from a bottom portion so as to have a mounting space therein, wherein when an LCD module is mounted at the LCD module mounting member, the outer flange is protruding from an upper end of the LCD module mounting member.

2. The structure of a display apparatus of claim 1, wherein the LCD module mounting member is implemented as a metal plate of an SUS material.

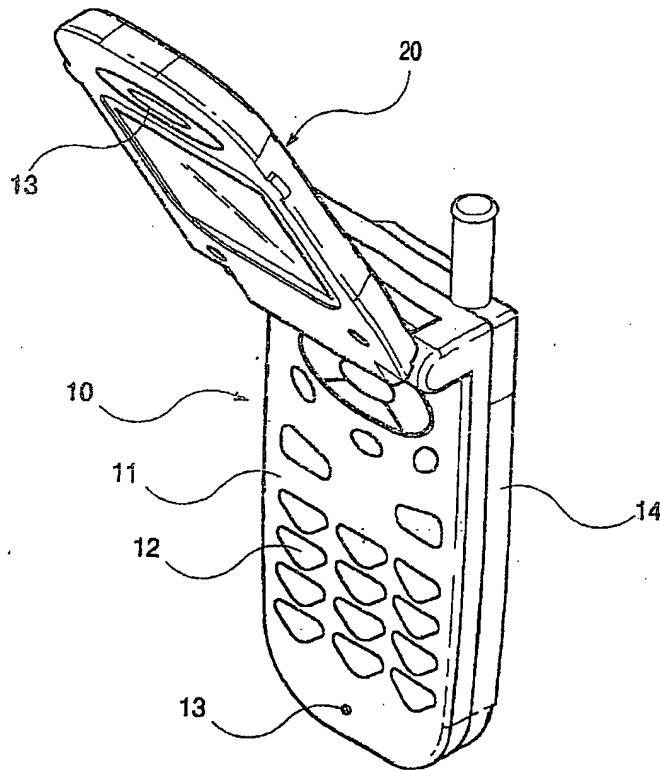




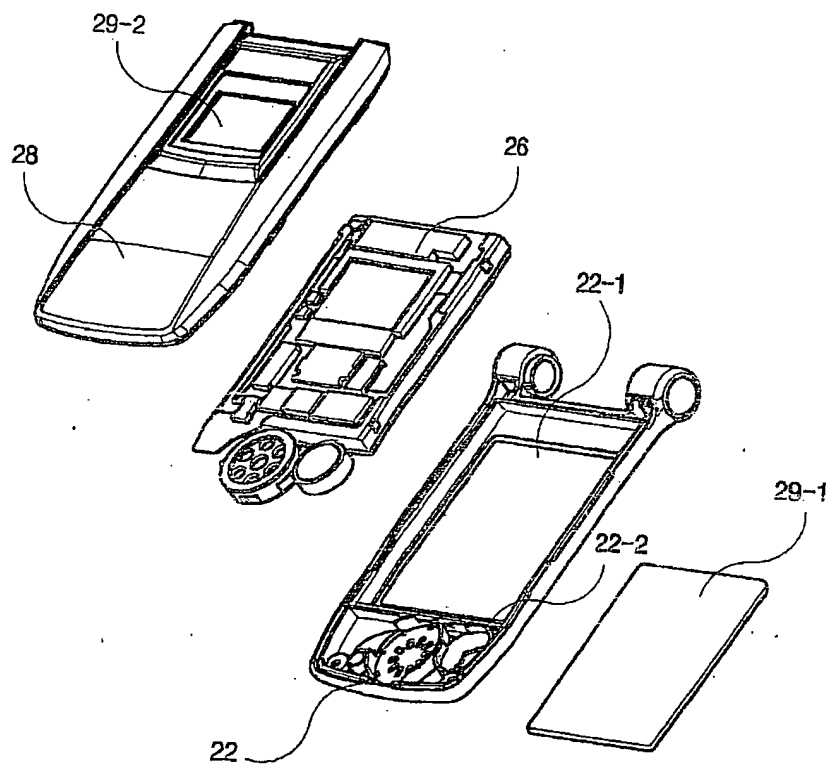
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[FIG.1]

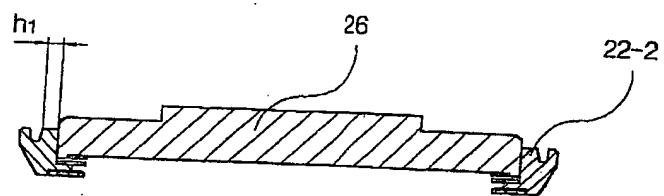
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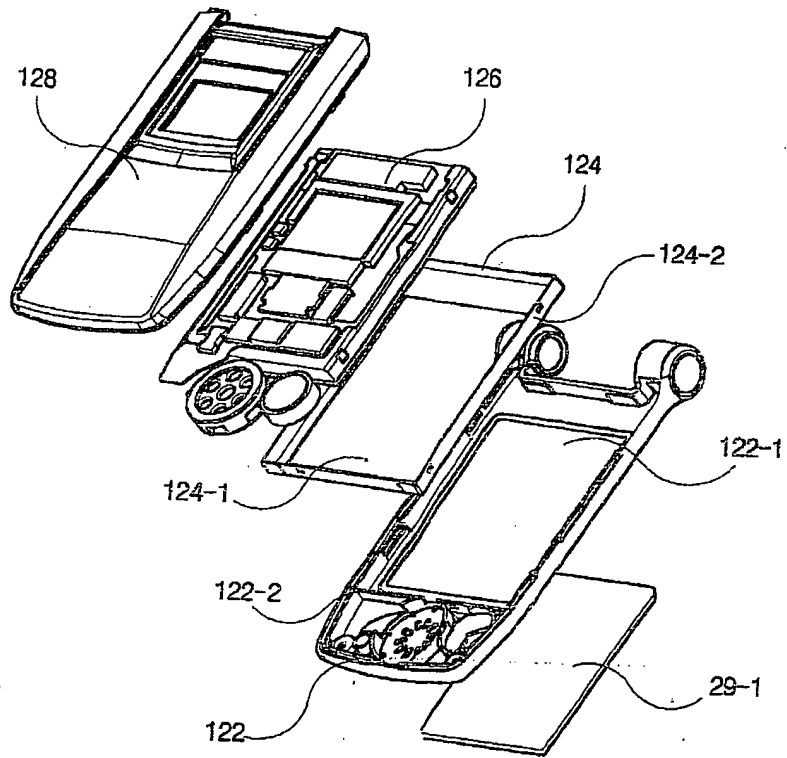
[FIG. 2]



[FIG. 3]



[FIG. 4]



[FIG.5]

